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JUL 28 1987

Jacksonville Shipyards, Inc.

ATTN: Mr. T. E. Thornton  
Assistant Manager

Quality Assurance

P. O. Box 2347

Jacksonville, FL 32203

Gentlemen:

SUBJECT: REPORT NO: 09-15611-01/87-01

Thank you for your response of June 15, 1987, to our Notice of Violation issued on May 28, 1987, concerning activities conducted under NRC License No. 09-15611-01. We have evaluated your response and found that it does not meet the requirements of 10 CFR 2.201. The shipping form that was enclosed with your response to the Notice of Violation does not conform to the requirements stated in 49 CFR Part 172.202 and 10 CFR 71.5(a).

We are enclosing an NRC Information Notice No. 81-02 to assist you in preparing a shipping form that will meet the above stated requirements. Please revise the shipping form accordingly and provide a copy of your revised form for our review within 30 days of the date of this letter.

Should you have any questions concerning this letter, please contact Mr. J. Potter at (404) 331-5571.

Sincerely,

*Original signed by W.E. Cline*

J. Philip Stohr, Director  
Division of Radiation Safety  
and Safeguards

Enclosure:

IE Notice No. 81-02

bcc w/o encl:

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UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
OFFICE OF INSPECTION AND ENFORCEMENT  
WASHINGTON, D.C. 20555

January 23, 1981

IE Information Notice No. 81-02: TRANSPORTATION OF RADIOGRAPHY DEVICES

Background:

Recent inspections by NRC have identified frequent noncompliance with transportation regulations by radiography licensees. As of December 3, 1979, the NRC inspection program has included inspection/enforcement of DOT regulations in 49 CFR 170-178 as direct NRC requirements (see 10 CFR 71.5).

The nature of radiography operations is somewhat unique in that radiography devices most frequently serve a dual function; that is, they serve as operational radiography cameras/source changers and as transportation packages. Historically, this has caused some confusion on the part of radiography users, particularly with respect to sorting out the transport regulatory requirements of 49 CFR/10 CFR 71 from the operational requirements of 10 CFR 34 and the specific license which has been issued to the radiography user. Another source of confusion for the radiography operator is that he most frequently functions, with respect to the transportation regulations, in the dual role of both shipper and carrier.

This notice discusses some of the pertinent transportation requirements for radiography devices when used as transport "packages." The explanations should help to clarify the application of operational licensing requirements versus transport requirements applicable to shippers and carriers, thereby enhancing regulatory compliance with the requirements.

Discussions:

Source Design -- Radiography sources contained within a device are always encapsulated (Co-60 or Ir-192) and, therefore, meet the physical integrity requirements of "special form" as defined in 49 CFR 173.403(z) and 173.469(a). Radiography transporters are reminded that these requirements call for each shipper of a special form source to maintain a file of supporting safety analysis or documentation containing the results of the testing performed on the source to demonstrate that it meets the special form requirements. This does not mean that each shipper has to actually perform the tests, only that he obtain and retain the documentation of the tests. As a practical matter, each radiographer should establish in his records a file of such data for each source design in his inventory. It may be necessary, therefore, for the radiographer to request the required information from his source supplier.

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Package Design -- Radiography sources in special form will constitute a Type B quantity when in excess of  $A_1$  ci, with Type B packaging required for transportation purposes. An exception to this rule is the DOT Specification 55 (referred to as "Spec. 55") which is not necessarily a Type B package (see 49 CFR 178.250; note that DOT no longer includes this specification in its annual printing of 49 CFR). Spec. 55 (see Appendix A) is authorized for limited Type B quantities (up to 300 ci) of special form radioactive materials in domestic shipments only [see 49 CFR 173.416(a)]. Under this provision, however, only Spec. 55 devices that were constructed prior to March 31, 1975 are authorized (DOT has recently announced the finalization of the "phase out" DOT Spec. 55; see 48 Federal Register, March 10, 1983, pg. 10222. After June 30, 1985, no shipments in any DOT Spec. 55 will be authorized.)

For those radiography devices that exceed  $A_1$  activity and are not contained in DOT Spec. 55, an NRC Certificate of Compliance (COC) must be issued pursuant to 49 CFR 173.416(b). Such approved designs may be used by other than the original COC applicant provided that such user registers with the NRC Office of Nuclear Materials Safety and Safeguards (NMSS), has a copy of the applicable COC, and complies with its terms and conditions [see 10 CFR 71.12(c)]. A listing of radiography devices for which NRC has issued a COC is given in Table 1 (see Enclosure 2). Copies of COCs are included in the NRC/NMSS report, "Directory of Certificates of Compliance for Radioactive Materials Packages" (NUREG-0383), which is updated annually.

**CAUTION:** The fact that a radiography device has been approved by NRC under a specific license provision pursuant to 10 CFR Part 34 as an operational device does not mean that it has been approved as a Type B transport package pursuant to 10 CFR Part 71.

Specification Overpacks -- Pursuant to 49 CFR 173.416(f) or (g),

Spec. 55 packages may be used to transport quantities of activity exceeding 300 ci (domestic service) or  $A_1$  Ci (international service), provided that a Spec. 20 WC (49 CFR 178.194) or Spec. 21 WC (49 CFR 178.195) protective overpack is used. Again, however, this authorization is restricted to the use of Spec. 55 packages constructed prior to March 31, 1975. For international shipments, shippers must additionally register as a user under the applicable DOT Certificate of Competent Authority issued by that agency pursuant to 49 CFR 173.416(c). DOT further requires that this certificate be supplied to the foreign consignee and Competent National Authority of the destination country.

Type A Packages -- For radiography devices not exceeding  $A_1$  Ci of activity as special form, the applicable transport specification is either DOT Spec. 7A [49 CFR 173.415(a)] and 178.350 or Spec. 55 [49 CFR 173.415(b) and 178.250]. For Spec. 7A, as in the case of a special form source, DOT regulations require that each shipper of a Spec. 7A package maintain on file written documentation attesting to the results of the Spec. 7A performance tests performed on the package design [see 49 CFR 173.415(a)].

\*  $A_1$  = maximum activity permitted in a Type A package when the material is in "special form". For Ir-192,  $A_1$  = 20 Ci; For Co-60,  $A_1$  = 7 Ci.



If the shipper of a Spec. 7A package is not the original designer or user of that package, it will be necessary for the shipper to obtain the test report data from the original supplier/user or to perform the tests.

Package Labeling -- Each radiography device (package) must be properly labelled with the appropriate category of RADIOACTIVE label in accordance with 49 CFR 172.403(a) through (d). This requires affixing two labels, with one label on each of two opposite sides of the package, based on the radiation dose rates at the surface and at 1 m. (transport index) from the package. The dose rates are limited to 200 mrem/hr at contact with any point on the external surface of the package and 10 mrem/hr at 1 m. from any point on the surface [49 CFR 172.403(b) and 173.441(a) ].

A question frequently arises regarding the labeling of radiography devices when enclosed in an outer "convenience" box, enclosure, foot locker, etc., during transportation. The question is whether or not the radiation levels at the surface of such an outer enclosure may be used to establish the labeling requirements for the overall "package." Since this situation is not addressed in 49 CFR, it is permissible to use such enclosures and to establish labeling on the basis of the dose rates at the exterior of the outer enclosure. Assuming that the inner component (the device) is a proper DOT Spec. 55 device or is designed according to NRC/COC requirements, and is marked as such, the outer enclosure would also have to be marked with the words "Inside Package Complies with Prescribed Specification" [see 49 CFR 173.25(a)] and also be labeled as required based on the dose rates at the surface and 1 m. from the outer enclosure.

**CAUTION:** The fact that a particular device has been issued an NRC certificate of compliance does not necessarily mean that, when fully loaded with its contents as authorized in a specific license, the dose rates will be within the regulatory limits. Each package must be surveyed to assure that proper labeling is applied.

Packages exceeding the limits of 49 CFR 173.441(a) may be transported in a closed, exclusive-use vehicle, such as a radiographer's van, provided that the following limits are met:

1,000 mrem/hr at the external surface of the package,  
200 mrem/hr at any point on the external surface of the vehicle,  
and 10 mrem/hour at 2 m. from the vehicle [ 49 CFR 173.441(b) ].

This means that a radiographer may transport a package reading more than 200 mrem/hr at the surface, but less than 1000 mrem/hr at the surface, in his own exclusive-use vehicle. The radiographer may not deliver the same package to a carrier for transport unless the carrier's vehicle is consigned for the radiographer's exclusive use.

Shipping Papers -- A shipping paper is required for each transfer of radioactive material from the confines of the licensee's plant, whether transported by the licensee or delivered to a carrier for transport. The shipping paper must include the information required by 49 CFR 172.203(d) for radioactive material, including the following:

1. The DOT proper shipping name. (For radiography devices, this will always be "RADIOACTIVE MATERIAL, SPECIAL FORM-N.O.S"). See 49 CFR 172.101.  
*Also, The hazard identification number. For special form, this is "UN 2974"*
2. The name of each radionuclide.
3. A description of the physical and chemical form of the material. (For radiography sources this description is "SPECIAL FORM").
4. The activity contained in each package measured in curies.
5. The category of label applied to each package (RADIOACTIVE WHITE-I, RADIOACTIVE-YELLOW II, or RADIOACTIVE YELLOW-III).
6. The transport index assigned to each package bearing RADIOACTIVE YELLOW-II or RADIOACTIVE YELLOW-III labels.
7. The package certificate identification, if it is an NRC-certified package.
8. For shipments tendered to a common carrier, the appropriate signed shipper's certification, and, for shipments by aircraft, the additional statement as to acceptability for either passenger-carrying or cargo-only aircraft. For shipments by passenger-carrying aircraft, the additional statement of intended use in research or medical diagnosis or treatment must also be included [49 CFR 172.204(a), 172.204(c)(3), (4), and (d)]

NOTE: Most radiography shipments would therefore not be authorized for passenger-aircraft shipments, since the intended use of the radiography equipment is not for research or medical applications.

9. Instructions for maintenance of exclusive-use shipment controls, in the case of packages transported with the higher dose rates allowed by

NOTE: The repetitive nature of radiography transportation lends itself to the preparation, of a "permanent" type of shipping paper documentation that is specific to each particular source/device configuration. Such documentation could even take the form of laminated cards retained in the vehicle glove compartment.

Vehicle Placarding -- The transport vehicle must be placarded by the licensee on the front, rear, and each side with the appropriate DOT placard (see 49 CFR 172.506 and 172.508) if any quantity of packages bearing the RADIOACTIVE-YELLOW III labels is to be carried in the vehicle. For packages

tendered to a common motor carrier, the licensee must provide the required placards to the carrier at the time the packages are picked up.

NOTE: DOT placard requirements should not be confused with radiography area posting requirements of 10 CFR 20.203 and 34.42.

Securing Cargo Within Vehicle -- Radiography licensees who transport devices (packages) in their own vehicles must provide for adequate blocking, bracing, or tie-down of the package to prevent its shifting or movement during normal transport. Incidents frequently occur wherein devices are thrown off and lost from moving vehicles, often without the driver's awareness. These incidents are usually caused by the failure to properly secure the device, combined with a failure to secure the cargo door of the vehicle. Recent cases of this type have resulted in civil penalty for failure to comply with 49 CFR 177.842(d).

Recommended Action

Licensees should review all movements of radiography devices away from their place of storage to ensure that they are (1) using appropriate packages, (2) properly controlling radiation levels on packages shipped, (3) providing proper shipping documents, and (4) following the applicable carrier requirements when transporting devices in their own vehicles.

No written response to this notice is required. If you require additional information regarding this matter, contact the Fuel Facility and Materials Safety Branch of the appropriate Regional Office.

Enclosures:

1. Appendix A, DOT Specification 55
2. Table I - List of Radiography Devices Having NRC Certificates of Compliance